CORRELATION BETWEEN CRP, PRO-CALCITONIN AND BLOOD CULTURE IN DIAGNOSIS OF NEONATAL SEPSIS WITH SPECIAL REFERENCE TO THE BACTERIOLOGICAL PROFILE AND ANTI-MICROBIAL SUSCEPTIBILITY PATTERN OF THE ISOLATES AT CMCH.

ABSRACT:

Background: Early diagnosis of neonatal sepsis is difficult due to its variable and non-specific clinical presentation. It is crucial to diagnose sepsis in time for prompt institution of anti-microbial therapy to improve the outcome. **Aim and objectives:** The aim of this study is to determine the diagnostic performance of Procalcitonin (PCT) and C-Reactive Protein (CRP) as early diagnostic markers in detection of neonatal sepsis in comparison with blood culture. **Methods and Materials:** This prospective study was conducted on neonates admitted to neonatal intensive care unit (NICU) at Coimbatore Medical College Hospital from June' 2014 and April' 2015. Specimens of blood (n = 200) were obtained from the neonate prior to antibiotic administration. Complete blood counts, blood culture and antibiotic sensitivity test for the isolates were carried out. Serum CRP level was measured using latex agglutination test. Serum PCT level was measured using Enzyme linked fluorescent assay (ELFA). **Results:** The blood culture isolation rate was 30.5% (n=61). Klebsiella pneumoniae (54.1%) was the most common GNB isolate followed by A. baumannii (9.8%) and Escherichia coli (6.5%). Among the Gram positive isolate (13.1%) Staphylococcus aureus was the most frequent organism followed by CoNS(9.8%). 12 K.pneumoniae (36.5%) and 2 E.coli (50%) isolates were phenotypically confirmed as ESBL producers. CRP was positive in 87 neonates (43.5%) of which 39 neonates had culture proven sepsis. The sensitivity of CRP was 63.9% and the specificity was 65.46% (p-0.389). The Elevated PCT levels (>0.5ng/ml) were found in 74 (37%) neonates among which 53 (71.6%) of them had culture proven sepsis. PCT had the highest sensitivity and specificity of 86.88% and 90.07% respectively in comparison with the other parameters analysed in this study ($p<0.001$). **Conclusions:** In this study serum procalcitonin level was superior to serum CRP level in terms of early diagnosis of neonatal sepsis, in detecting the severity of the illness and in predicting the response to treatment. In some cases of neonates with culture proven sepsis other screening tests were negative but the level of PCT was seemed to be elevated. These findings support the usefulness of the PCT to establish an early diagnosis.

Key words: neonatal sepsis, blood culture, procalcitonin, C-reactive protein, early diagnostic markers, bacteriological profile.